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**From:** Giancarlo, Mary Beth [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=688488C9E6804937AB6E6F32E6DE0066-MARYBETH GIANCARLO]  
**Sent:** 9/30/2021 3:44:41 PM  
**To:** Andrae, Bill/MKE [William.Andrae@jacobs.com]  
**CC:** Christopher Klinkhamer (Klinkhamer.Christopher@epa.gov) [Klinkhamer.Christopher@epa.gov]  
**Subject:** RE: Gorge Dam - Bulkhead Wall Test Pit Investigation Update

Wow, how interesting! Glad to hear things are going well out there and that you found tie rods!

When do the QA and H&S audits take place? During the drilling?

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**From:** Andrae, Bill/MKE <William.Andrae@jacobs.com>  
**Sent:** Thursday, September 30, 2021 10:35 AM  
**To:** Giancarlo, Mary Beth <Giancarlo.Marybeth@epa.gov>; Klinkhamer, Christopher <Klinkhamer.Christopher@epa.gov>  
**Cc:** Reif, Marty/WDC <Marty.Reif@jacobs.com>; Skwarski, Alison/DET <Alison.Skwarski@jacobs.com>; Shim, John/KNV <John.Shim@jacobs.com>  
**Subject:** Gorge Dam - Bulkhead Wall Test Pit Investigation Update

Good morning Mary Beth and Chris - All went well on our first day of test pitting and there were no health and safety issues. We met our subcontractor in the morning and went over the traffic control plan with them, and held a lengthy H&S morning tailgate meeting. We waited until about 10 am for the excavator to be delivered and offloaded it on Front Street and got it onsite without any problems.

The subcontractor started on location TP-3, where we **found tie rods right where we predicted based on looking at the outside of the bulkhead wall**, down at about 30" bgs connected to a whale plate. We dug back about 19' and located the deadman piers, and a separate foundation wall (or some similar structure behind it). We excavated over ~13' and found the next tie rod, which also extended back to 19' to a deadman. There was also a foundation or wall present about 10-12' back from the bulkhead, but it ran under the tie rods. We then dug down to ~10 feet (hit water at ~8') and found no evidence of a deeper set of tie rods.

Moved over to TP-2 next, and repeated the same process, tie rods were 13' apart, but here they extended back 19' to a long foundation wall that acted as a large, singular deadman pier. We excavated here down below the tie rods, to about 6' bgs. Both individual large test pits (both roughly 20' x 20') acted as 2 smaller test pits, as we were able to answer the questions we needed to with one larger pit.

Both excavations were backfilled before leaving the site. TP-2 was compacted and completed, TP-3 will be allowed to settle overnight before compacting it first thing tomorrow AM. Attached are our some pictures of each pit. I will send a follow up email with another picture of TP-3 (6 MB).

The geophysics subcontractor went back to reevaluate his data and is indicating because of the small size, age of installation, corrosion of the tie-backs and the ever-present debris, rocks, gravel, concrete, they do not stand out or are not reflected back by the radar waves. Also the deadman are concrete and not steel like we were anticipating. He's changing some gains and settings on his data to determine if he can pick them up.

Today's work will consist of additional test pit excavations and we should have everything completed today.

Please let us know if you have any questions.

Cheers!

Bill

**Bill Andrae** | Jacobs | Design Manager / Environmental Engineer

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